ADDRESSES—PRESIDENT A. C. HUMPHREYS, International Gas Congress; PRESIDENT E. C. JONES, American Gas Institute.

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KOPPERS

BY-PRODUCT COKE OVEN

SURPLUS GAS

THE yield of surplus gas from the new KOPPERS coke oven plant of the LACLEDE GAS LIGHT CO. at St. Louis has never been equalled by any other coke oven plant.

H. KOPPERS COMPANY

Builders of

By-Product Coke and Gas Ovens

Pittsburgh, Pa.

THE AMERICAN
GAS LIGHT JOURNAL
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VOL. CIII., No. 14. NEW YORK, OCTOBER 4, 1915. WHOLE No. 2,124.

INTERNATIONAL GAS CONGRESS.

Opening Address by Dr. Alex. C. Humphreys, President, September 28, 1915.

As the representative of the gas societies of the United States, it is now my duty to declare that the International Gas Congress of the Panama Pacific International Exposition is in session.

It is my privilege first to extend a most sincere and hearty welcome to all in attendance. And I speak for all those I represent, when I say that we, of the United States, are keenly appreciative of the presence of our brethren from foreign countries.

The International Congress of the gas men of the world has come to be limited in some degrees through the unhappy conflict which is now raging over the greater part of Europe, while involving Asia, Africa, Australasia and the isles of the Pacific.

It is most gratifying in the face of this interference, so grave in character, that this Congress, as to attendance, and particularly as to contributions of papers, is still of international scope.

When this Exposition was planned, and even later, when this Congress was suggested, the man who had ventured to suggest as even a posible interference a war involving all the great powers of Europe, would have been pronounced a rank pessimist, if not a madman.

But the impossible, as it then appeared, but which, with the records even so far disclosed, we can now see was inevitable, has come to pass. And thus many of our co-workers from abroad, whom we hoped to welcome at this time, are now arrayed against each other in what threatens to be a death struggle. In this frightful happening our sympathy goes out to all who have been innocently dragged into this barbaric war by the acts of others.

Let us, then, first pause to express the hope that out of this world-war, the most shockingly destructive and horrifying within the knowledge of man, there may result finally some measure of compensating good for the peoples as a whole, and particularly greater security for those who are anxious to live at peace with their neighbors and to exercise the right of working out their own destinies, free from outside pressure and interference. Let us at least cherish the hope that the cruel maiming and killing of combatants and non-combatants, does not indicate a retreat from the struggle for a higher civilization, a cause to which we, particularly as engineers, are committed. This hope is encouraged, as we hear of the many acts of self-sacrifice and heroism on the part of the innocent participants in this bloody struggle. May we not wisely recognize the present world conditions as a deserved rebuke to that spirit of boastfulness and self-sufficiency which regards all things and ideals of the present as superior to those of the past. For our own safe guidance, we are being reminded that in the administration of this world's affairs, we still have to deal with the same human nature, with all its primitive weaknesses, with which the people and governments of the past have had to deal. This is a lesson that we of the United States particularly should take to heart.

With regard to engineering, it is disconcerting to recognize as we must, that the wonderful advances in science made during the last century have greatly increased the horribleness of war. This being the case, we are, I fear, forced to the conclusion that those who, with consistent and persistent efficiency, avail themselves of the teachings of engineering science to prepare for war, possess a controlling advantage over those who, recognizing, as we all do, the material and spiritual benefits of peace, are content to depend for their protection on the good will and forbearance of those who have the power, if not the avowed purpose, to enforce their wishes, demands, and even their so-called ideals. Those who are unprepared are thus left at the mercy of the prepared.

There are no people of the world better situated geographically than we of the United States, to pursue untramelled our vocations and avocations of peaceful living. But this advantage is only comparative and does not guarantee to us immunity from war's bondage.

"Eternal vigilance is the price of liberty." But knowledge of a threatened peril affords in itself alone no protection from tyranny.

With all the misery surrounding us, it is fortunate that our immediate duty is to devote ourselves for the next few days to the

> In connection with our discussions, "we must not forget that those who have been unable to meet with us are to be given the opportunity to study the records of our sessions. This places upon us a responsibility which, I am convinced by a long and wide experience, is not sufficiently appreciated by the membership of societies formed for the promotion of specialized study. The transactions of these societies in many cases fail to disclose adequate discussion, thus leaving the questions involved answered incorrectly, or unanswered. In our technical meetings too many men sit silent when they have valuable matter to disclose; this sometimes from modesty and sometimes from indifference. Some, on the other hand, are too ready to occupy the floor in presenting irrelevant or misleading discussions. It is the activities of the latter which increase the responsibilities of the former. Let us, then, be diligent and painstaking at this time to develop the truth, the whole truth, and nothing but the truth."

study of the questions involved in one of the peaceful arts, the making and using of gas. We are fortunate that we can take up the study of our many problems free from the fear that the product of our knowledge, experience, and energies might be applied to the injury and destruction of our fellows.

With a sense of relief from direct participation in the trials, miseries, and sorrows of our fellows, we must also realize that we are involved through the ties of brotherhood. It is for us to do all that lies in our power to alleviate the distress so much in evidence abroad. When we think of the barbarities which are now chargeable against members of the human family, it is some consolation to reflect upon the noble, selfsacrificing work of relief being done by non-combatants. In this work the people of the United States have stood out in the front rank; and let us all show by word and deed that we appreciate there is no retreat from this assumed duty until the war and its immediate effects are things of the past.

Not only in the direction of charity does there rest upon us a grave responsibility, but also in making preparations to the limits of our means and powers to adjust our industries to supply those products which the countries now at war will be unable for some time after peace is declared to create for themselves. This is a responsibility which rests with particular weight upon the members of the engineering professions, for it is upon engineering in its many branches that the industries depend. I say all this in no mercenary spirit, for the more efficiently we are prepared to supply the peoples abroad, the lighter can be made their financial and physical burdens during the period of recuperation.

Notwithstanding the events which overshadow us, we must meet our own direct responsibilities. It is then encouraging that so many of us have been able to meet here to exchange our views and experience with respect to that part of the world's work for which we are more specifically responsible.

The foundation of our business is in one branch of engineering, a branch which is broad in its scope, involving as it does much which is ordinarily classified as civil, mechanical, mining, chemical, and even electrical engineering. Combine this breadth of scope as to engineering with the complex business and politico-economic questions which present themselves for our solution, and we must realize that we carry our full share of responsibility as citizens and members of a great community.

So coming to our immediate work, we have to bear in mind that we have many problems to solve and many difficulties and dangers to meet.

In the electric light we have a competitor which has grown stronger year by year. Let us not fail to realize that this competitor has been guided by financiers, engineers and business men of the highest attainments, Particularly has the profession of engineering here contributed of its best. Let us not deceive ourselves, therefore, as to the facts, but let us face the facts and so be the better prepared to demonstrate where, when, and how gas can be best and most economically employed. We are told that necessity is the mother of invention. It is also the spur to the most intense and persistent effort. We cannot afford to neglect any opportunities for betterment which present themselves or can be discovered.

Here in the United States, in common with our electric light competitors, we have other troubles and dangers to meet and overcome. Particularly have we in common with all the public utilities to meet the present evil of over-regulation. Perhaps our friends from abroad are in a position to sympathize with us in some degree.

The necessary regulation suggested by changes in methods of living since the time of Jefferson does not call for the placing in the hands of a single department the power to exercise the three functions of government—the legislative, the executive, and the judicial—the three functions which that "most conspicuous apostle of Democracy in America," as he has been styled, declared must be kept separate. To this same principle the party now in power most specifically committed itself in the last presidential convention platform. Here in the United States we are too ready to enact new laws to control, cure, or eliminate the old faults, weaknesses, and sins of humanity. Over 60,000 new laws put upon our Federal and State statute books in 5 years, necessarily mean superficial law making and ineffective enforcement.

Regulation by commission, no doubt, has come to stay, but it has already been over-developed. And here it is alarming to find that the demand is being made by the Interstate and other Commissions for enlarged powers.

Although this feature of our government has come to be more and more in conflict with our boasted traditions, and particularly dnring the last 2 years, it is the exception when a voice is raised against this revolutionary departure from a fundamental feature of our form of government. Not a small part of the responsibility for this unfortunate condition must be borne by the owners and managers of the properties, including bankers, business men, small investors, and the officers of the companies, particularly the latter for they are or should be the best informed as to the facts and the questions involved. All directly concerned should be prompt, fearless, diligent to correct misstatements and misinformation, and to disseminate the truth, and all done openly and above board. They should also be courageous and untiring in their resistance to persecution and confiscation when it parades under the cloak of regulation.

The Constitution of the United States is supposed to guarantee its citizens against the taking, not only of life, but of property, without due process of law. In too many cases this guaranty has been repudiated.

Let us not be put out of countenance because those who, either through ignorance, misdirected zeal, or evil content, point to the misdeeds of some as a reason for punishing all. Let him who is without sin cast the first stone. Then no stones would be cast. But this is not our defeuse. We claim that as a general proposition our business is carried on with a due regard for the rights of all others concerned. In this respect we invite comparison with those of other vocations, and particularly we invite comparison with the professional reformers and ear-to-the-ground politicians.

Let us be keen to do full justice to all those with whom we deal; let us be prompt to co-operate with the authorities in all their efforts looking to improvement; and having met our full responsibility to those we serve, let us be courageous, diligent, indefatigable in protecting our properties against unfair control and ourselves against unfair and slanderous aspersions.

Our program is full and rich and we can now best do our duty to our principles and to those we serve by undivided attention to, and a complete discussion of, the papers to be presented.

It devolves upon us who reside away from the Pacific Slope, to do our outmost to make this Congress an unqualified success, if for no other reason than as a recognition on our part of the work of preparation done so generously and efficiently, and in the face of great obstacles, by the officers and members of the Pacific Gas Association and those associated with them.

Sulphur Mining in Texas.

Near Freeport, Tex., sulphur is produced from beds approximately 1,000 feet below the surface. The sulphur is melted in place and can then be raised to the surface by means of an air lift. Superheated water at a temperature of 336° F. and under high pressure is forced into the sulphur-bearing formation. The water penetrates the deposit and melts the sulphur (whose melting point is 239° F.), which then flows to a pipe from which it issues at the surface and runs into bins. These bins are constructed of boards which are raised as the mess increases, the bins finally reaching a height of 30 to 35 feet. The sulphur promptly congeals on exposure and after a few hours assumes the true sulphur yellow.

Public Control Pictured by "Concerning Municipal Ownership."

Every man who voted for municipal ownership must see to it that the plant is operated in a business-like manner.—*Record*, Sherbroke, Quebec.

THE UP-KEEP OF MECHANICAL UNITS IN LARGE GAS PLANTS.

Paper by C. A. JEFFERIS, read before the Canadian Gas Association.

It has been suggested that I tell you, very briefly and in a general way, some of my own methods for maintaining the efficiency of our large plants, which is being done, without, as some of you are aware, any figureheads or frills.

You gentlemen know that in large plants such as we have in Toronto, and more especially where almost all the repairs and renewals are made at the Company's own shops, the engineer has something else to think about than writing papers or making speeches. We in the engineering profession are taught to spend our lives doing things, and to let the other fellow do the talking; but you have so persistently asked for it, now, I am afraid you will have to put up with the consequences, and personally I am not sorry for you.

At the start let us make this point quite clear, namely, that we cannot work any miracles at our plants, we don't know how; we cannot do anything that cannot be done anywhere else under similar conditions, but we are, I think, doing some things that are not being done at any other gas works either in England or America. Now, remember, Toronto is not an engineering manufacturing centre, which means that we have to pay duty and freight and wait, with emphasis on the Wait, for almost every part of any machine we buy.

We have in our combined plants 147 prime movers, consisting of steam engines, gas engines, turbines, compressors, pumps, etc. In fact, we have the reputation of having more machinery per 1,000 feet of gas made than any gas works in the world, the power for which is supplied by our five steam plants. The majority of these units are operated almost continually 24 hours per day, and a large number of them have been in service a great many years. Therefore, it is quite apparent it takes something more than talk to keep all these units in a state of efficiency, and all engineers know know that machinery working in an atmosphere of coke dust, such as coke conveyors and other such equipment, are subject to excessive wear, and that continuous inspection is necessary; repairs, renewals and breakdowns must be anticipated and provided for. And in order that our companies shall have the benefit, to the fullest value, of the capital they have invested, it is the duty of the engineer to see that all labor saving machinery is in a condition to operate as nearly continuous as possible; not run a month or two and then be shut down three or four months for repairs.

To illustrate what I mean: A few months after our conveyors were installed at the old works, in 1904, one of the cross coke conveyors, carrying coke from the retort house to the coke storage shed and boiler house and oil gas plant, broke a gear, and we did not have a spare equalizing gear in stock, neither did the manufacturers in Philadelphia, and with all the rush and pressure exerted, it took 6 weeks to replace it, during which time it necessitated our employing more that 20 extra men to handle the coke from the retort house to the various places mentioned, the cost of which would pay for many gears.

How are such delays to be avoided, and how are we to maintain the working efficiency of such equipment? That is the problem. The writer has learned during his 35 years of working experience that the three golden rules of management in large mechanically operated plants are:

First—Standardization of units.
Second—Classification of parts.
Third—Specialization of labor.

And to the younger engineer, who, in a very few years must take our places, I say, if you forget everything else, remember these nine words. *Standardization of units, Classification of parts, Specialization of labor.* I can assure you it will take the remainder of your life to work them out in practice; and you need not expect any spotlight notoriety from the practice of these methods, because you will not get it; you will be too busy working, but you will be the ideal man for the shareholders.

First—Standardizations of units. What do I mean by that? To illustrate just for a moment, think of the Ford automobiles; all the same size, same horse power, all parts of the same dimensions, in a word Standardized, Now, precisely the same principle was carried out in Toronto in the design and installation of the power for twenty-eight lines of conveyors, and, as far as possible on all other equipment subject to wear. When deciding on the type of any mechanical unit the engineer should have in mind, not only will it do its work, but will it do its continuously, what will be the cost for up-keep, and am I going to need more than one, and if so can I standardize? To illustrate, we have one type and nearly all one size of engines driving all our twenty-eight lines of conveyors; this means that valves, pistons, crankshafts, connecting rods and, in fact, every part of the engines are interchangeable. This applies also to our steam plants, boilers and fittings, stack and furnace fittings; in fact I carry it as far as I can in everything, for standardization means low maintenance charges and efficient continuous working. Now do not misunderstand me, I do not mean by standardization that all engineers should adopt the same type of any mechanical unit. That would be curbing the engineers individuality. Install any power or type you like, but if you are going to operate many mechanical units it will pay you to standardize them.

Second—Classification of parts. Particularly for all units that are subject to excessive wear, never allow the standard size of any machine to be changed without a very good reason. We all think we know a great deal more about a machine than the men who designed it, but the fact is we don't, and we should hesitate before allowing any changes, especially if we keep standard parts in stock and expect them to fit. The number of spare parts to be kept for emergencies can only be determined by experience mixed with a little common sense. Don't over do it; you will readily understand that by standardizing, that is by using the same type and size of engines, buckets, chains, drives, etc., you simplify your problems and naturally reduce the number of parts required to be kept in stock. This applies to everything that is interchangeable and subject to wear. This should be the aim of every engineer in charge of a large plant; that is, of course, if he really wishes to be able to do the work of up-keep himself. I can assure you that if these lines are followed your foremen and stock-keepers will bless you, for you will reduce their troubles to a minimum. And I know from the experience of a lifetime that it is the ideal way to operate large plants such as exist in Toronto.

It is quite apparent that the continuous wear of the multitudinous parts of conveyors, especially together with unexpected breakdowns that will happen, even with the most vigilant inspection, to repair or renew the parts and, at the same time keep them almost continually running, is a problem; the solution of which is to have the parts ready and interchangeable. Standardizing the parts is standardizing units, for parts go to make up units. For instance, with twenty-eight miniature railways, for that is what they really are, we are going to have excessive wear on some parts, and we are going to have mishaps sometimes, and in order to make the breakdowns as few as possible and repairs and renewals in the shortest time, the most economical way is to be prepared.

Third—Specialization of labor—This means to classify your workmen as far as possible, keeping them at the same class of work. The day of the all-round mechanic is gone, and the specialist is here to stay.

It has been said that the industrial problems of a complicated civilization has made us all specialists. But whatever else it has done, it has awakened us to the fact that we must organize our ways and means to suit new conditions and progressive development in the management of large mechanically operated plants.

About 14 years ago I started classifying labor in Toronto. For example, I took a handy laborer, who had never seen a conveyor before, and trained him as a conveyor inspector, with instructions that if I found him working with a hammer and chisel he would be dismissed, that his business was to inspect the conveyor systems, not to repair them, to keep tab on supplies of spare parts for renewals and repairs, and train and inspect conveyor operators; with the result that to-day this man has become so expert in his work that he can teach me how to inspect his 28 lines of conveyors, and through his skill has saved our company thousands of dollars in preventing breakdowns and delays. This is one of the results I have obtained through specializing labor. The same principle applies to all other equipments, such as engines, pumps, turbines, boilers and buildings.

Take another example. We have 37 buildings in our combined plants, that are inspected by the foreman bricklayer, who is responsible for the general condition and up-keep of all buildings. The repairs and up-keep of the various departments depend largely

upon such men, and they are directly reponsible for the condition of the equipment that they inspect, and the conduct of respective operators. Organizations and systems, especially in large plants, can be very much overdone, and to handle skilled labor generally requires some tact and good judgment. We have all seen concerns where there seems to be all manner of systems without very much result.

You know, gentlemen, it does not take very much skill to award a contract, and a few months after its installation, to criticise the contractor, condemn it, throw it out and try something else; although I know from experience there are occasions when this is necessary and is perhaps the only remedy for the disease, but the man who is valuable to the company is he who takes this equipment, whatever it is, with all its imperfections, and keeps at it until he makes something out of it.

In conclusion, just a word to the younger engineer: Accept and shoulder responsibility; for your own sake be something more than a critical watchman, and in dealing with mechanical problems don't forget the *three rules*.

(Continued from page 201.)

Illuminating Engineering Society, Ninth Annual Convention.

HOTEL WILLARD, WASHINGTON, D. C.

Beginning with Wednesday, the sessions were divided to care for the large number of papers (too large a number), and while the total attendance was good, many authors had to accept the "I think the society should be congratulated," etc., kind of discussion, which one member described as "the Professional Thank-you-mam of Technical Gatherings."

WEDNESDAY MORNING.—LABORATORY SESSION.

Under Chairman E. P. Hyde four highly technical papers were presented which will have much value for reference. All were the efforts of two or more authors, and were read by those first named. "Effect of Variation of Atmospheric Pressure on the Candle Power of Various Flames," E. C. Crittenden, E. B. Rosa and A. H. Taylor; "Life Testing of incandescent Lamps at the Bureau of Standards," G. W. Middlekauff, B. Mulligan and J. F. Skogland; "Colored Light Photometry," H. E. Ives and E. F. Kingsbury; "Visual Efficiencies," L. A. Jones, M. C. Hodgson and Kenneth Huse.

WEDNESDAY MORNING—COMMERCIAL SESSION.

The most exciting session of the convention was provided by the paper, "How Can a Combination Company Render the Best Lighting Service?" by A. B. Spaulding and N. H. Potter, which was read by the latter. Other papers were "Electric Store Units," W. R. Moulton: "Small Incandescent Lamps," R. P. Burrows; "Gas Pilots," C. W. Jordan. Among those entering into the discussion were Messrs. Lytle, Macbeth, Millan, Ely, Moulton, French and Hanlan and Chairman C. A. Littlefield. It hinged upon the question as to whether both gas and electric lamps should be installed for store and office lighting.

AFTERNOON—COMMERCIAL SESSION.

"The Lighting of Armories and Gymnasiums," by A. L. Powell, and "Mercury Vapor Lamps," by W. A. D. Evans, occupied the afternoon session, as the paper on "Gas Lamps," by R. ff. Pierce was withdrawn.

WEDNESDAY AFTERNOON—LABORATORY SESSION.

The laboratory session had better attendance in the afternoon, and Dr. H. E. Ives called upon Mr. P. G. Nutting, who discussed "Retinal Sensibilities;" followed by "Brightness," by P. W. Cobb. This latter subject was brought up a number of times at the convention, but the commercial men do not seem inclined to place much importance upon the Dr.'s precepts. A suggestion on "Calculation," by Messrs. F. A. Benford and H. E. Mahan was read by the latter, closing the session.

Tea for the Ladies.—Six autos took the ladies through Rock Creek Park in the afternoon, and thence to the Columbia Country Club where tea was served, a glimpse was had of the President golfing, and the spot where Mr. Littlefield broke his club.

The Banquet.—Music, dinner and speeches were the unusual features of the banquet which was held in the room to be used by the exhibitors at the coming N. C. G. A. Convention.

President McAllister was indisposed and toastmaster G. H. Harries filled both places with the dignity and urbanity required. President-elect Steinmetz, Major C. W. Kutz and Mr. F. W. King made the speeches. The prize gavel for attendance was awarded to Pittsburgh, and the prize for singing was won by the graduates of the College of Experience.

THURSDAY MORNING SESSION—COMMERCIAL SECTION.

Dual sessions again on the morning of the last day brought more grief for the authors. "Lighting of the State War and Navy Building," by Mr. W. E. Chapman, and "Office Buildings," by A. O. Decker and J. J. Kirk, read by the latter, were heard by a few, and the discussion indicated that they should be passed by the Board of Censors. "Illumination and Accidents," by Mr. R. E. Simpson, gave more data as to the importance of good lighting for the prevention of industrial accidents. One of the real gems of the convention, "The Illumination of Interiors as related to Architecture and Decorations," by Mr. David Crownfield, included a wealth of illustrations shown by slides, all of which were analyzed and described with keen insight.

LABORATORY SESSION.

"The Parabolic Mirror," by Mr. F. A. Berford; "Ultra Violet Radiation and the Eye," by Mr. W. E. Burge; "Eye Studies," by F. K. Richtmyer and H. L. Howes, and "Photography," by Dr. C. E. K. Mees, occupied the morning session.

Society Luncheon.—Preparatory to winding up the convention, a luncheon was held, at which the Society's affairs were discussed. The need of active members and the ease with which one may become a full fledged illuminating engineer, was one of the many topics.

FINAL SESSION.

"Yellow Light," by Mr. M. Luckiesh, and "Experiments on Eye Fatigue," by Dr. C. E. Ferree and Miss S. Rand, completed the technical offerings.

The Committee's report on President's Address, votes of thanks, praise and appreciation brought the curtain down on the most voluminous convention of the Society.—T.

Gas men in attendance at the I, E. S:

R. ff. Pierce.	A. M. Morgan
Geo. S. Barrows.	M. A. Combs.
L. B. Eichengreen	T. Scofield.
M. J. Brady.	A. G. Spaulding.
H. E. Ives.	C. H. French.
F. H. Gilpin.	N. H. Potter.
F. N. Morton.	F. D. Pembleton.
D. F. Prendergast.	L. B. Burrows.
C. W. Jordan.	W. G. Hoyt.
S. Snyder.	J. P. Hanlan.
E. F. Kingsbury.	H. G. Reed.
T. J. Litle.	J. M. Riley.
F. G. Corbus.	H. K. Dodson.
H. C. Palmer.	Thurston Owens.

Recent Patent Issues.

Prepared for the AMERICAN GAS LIGHT JOURNAL by ROYAL E. BURNHAM, solicitor of patents and counselor in patent causes, 833 Bond Building, Washington, D. C., from whom illustrations and specifications of any patent mentioned below may be obtained for 20 cents.

1,147,790. Vertical Retort for the Production of Gas by the Carbonization of Coal. A. McD. Duckham, Waseda, Highfield, Ashstead, England, assignor to Isbell-Porter Co., Newark, N. J.

1,148,360. Gas Heater. W. Collins, College Point, N. Y., assignor to Stamford Gas Stove Co., Stamford, Conn.

1,148,435. Gas Bracket Stove. F. E. Bennett, Ulysses, Pa.

1,148,466. Gas Lighting Device. A. B. Shaw, Medford, Mass.

1,148,779. Gas Meter. T. Jackson, London, England, assignor to A. Ramsay, Chesham, England.

1,148,709. Gas Water Heater. A. J. Rasanen, Springfield, Mass.

1,148,833. Measurement of the Flow of Gas in Conduits or Pipes. H. M. Edmunds, Westminster, England.

ADDRESS OF PRESIDENT E. C. JONES, AMERICAN GAS INSTITUTE, SAN FRANCISCO, CAL.

The year 1915 is a period of unusual happenings, and the American Gas Institute in holding its tenth annual meeting in San Francisco on the shores of the Pacific Ocean, is justifying its claim of including the whole United States in its field of activities. This is the first time in the life of our industry that an American gas association has held a meeting west of Denver, and if we think for a moment the reason becomes clear.

Ours is a busy fraternity dealing with the manufacture and distribution of a product still mysterious and little understood by the public, and it is only the increasing vigilance of the gas engineer which ensures uninterrupted service. The active alert men of the gas business cannot travel far from the scene of their duty, and a trip to California is an event of a lifetime. To fully appreciate the distance travelled by most of our members to attend this meeting, it is necessary to study a map of the world.

San Francisco is nearly 3,300 miles from New York. If the points of a pair of compasses are placed on New York and San Francisco, and the distance is used as the radius of a circle with London as its centre, the circle includes the whole of Newfoundland, part of Labrador, the whole of Greenland, all of Europe including a portion of Siberia; it reaches beyond Suez, and embraces about one-fifth of Africa. In other words, if a gas congress were held in London, it could be reached by everybody in Europe, Northern Africa, Greenland and Newfoundland, with out travelling further than from New York to San Francisco. These distances are rather appalling, but they are more than equalled by the enthusiasm and fraternal spirit which bring this gathering of gas men together.

Our California is an empire in itself, and with its more than 100,000,000 acres of land, it would hold the entire population of the world with less than sixteen persons to an acre. I can see in the future an increasing industrial, agricultural and commercial importance which will bring California so near to the east that Gas Institute meetings in San Francisco will be necessary and frequent. The gas men of the Pacific Coast appreciate the honor of having this meeting in San Francisco, and it will redound to the credit of the Institute for proclaiming that its title of "American" covers the United States from ocean to ocean.

An innovation in Institute work was the appointment of a Committee on Collective Gas Exhibit for the Panama-Pacific International Exposition, and had it not been for the effective efforts of your committee, our industry would not have been represented in this great World's Exposition.

The Collective Gas Exhibit occupies 10,000 square feet of floor space in the Palace of Manufactures, and is illustrative of the manufacture, distribution and uses of gas. The exhibit is lighted by gas, and is a convincing exponent of the economy and efficiency of gas illumination. The Grand Prize, which is the highest award in the gift of the Exposition, was awarded to the Collective Gas Exhibit; and on the special exhibitors' day of the Manufacturers and Varied Industries Palaces, the first prize, a silver loving cup, was awarded to the Collective Gas Exhibit for the most attractive and best decorated exhibit in the Palace of Manufactures. This unqualified success of an Institute committee dispels any unspoken thought that the Institute is not keenly alive to the growing importance and boundless possibilities of the gas business.

Your President urges a close study by the captains of our industry of the report of your Public Relations Committee. This report discloses the fact that the work of this committee in the education of the public mind along economic lines has advanced the cause of gas in the betterment of service to the public, and the saving of waste to the manufacturer by intelligent regulation of the quality of our product.

The work of this committee, together with the constructive and standardizing work of your Technical Committee, and the various co-operating sub-committees, places the American Gas Institute in the front rank of national engineering societies, and enhances the value of membership. A continuation of this work should be fostered and appreciated by the gas undertakings of this country to such an extent that our membership should be largely increased, and the Institute become a clearing house for the settlement of questions of policy relating to all departments of the gas business. This leads to the thought of the wisdom of continuing the life of active and important committees, engaged in progressive investigation. On account of our participation in the International Gas Congress, the proceedings of our tenth annual meeting will consist mainly of the reports of committees, and your Board of Directors has chosen this opportunity to prepare an index of the proceedings of the past decade covering the life of the Institute, which will add materially to the value of our published proceedings.

Your President has spent forty years of unfaultering devotion to the gas business, and thirty-six years to association work, and during that time, filled with its failures and successes, menacing competition and triumphant advancement, no fear of the future glory of the gas business nor loss of faith in its eventful predominance has crept in.

The future of the gas business looks very bright. We are the purveyors of a commodity which has become a public necessity and before us lies a field of opportunities.. We are dealing with British thermal units, and with a knowledge of their application, gas should be pre-eminent where heat, power or illumination is needed in domestic and industrial economy.

The success of our business depends upon the individuals engaged in its various departments, and a grave responsibility rests upon the men who are the framers of its destiny. An unshaken belief in the efficiency and economy of gas for all purposes is necessary to a permanent development of the business, and the agents must be gas men, not gas-and-electric men. Gas and electricity cannot be well and impartially served by the same hand.

While new extensions are necessary to expand our business as communities grow, the greatest and most fruitful field will be the development and new uses for gas among present consumers. As men must be the potent factors in the upbuilding of our industry, it rests with the gas associations of our country to educate the men, and therein lies a wide scope of usefulness for the American Gas Institute.

Death has taken eight of our members during the year, and it has been the custom to record the death of a member by inscribing his name and the date of his death on a memorial page in the *Proceedings*. While I do not approve of the ordinary eulogistic obituary notices, it seems to me that the dignity of membership in the American Gas Institute calls for more than passing notice, when it is terminated by the hand of death. I therefore recommend for your consideration the appointment of a committee on necrology, whose duty it shall be to prepare biographical notices of deceased members for publication in the *Proceedings*. These notices will have historic value, and if a man's life work has been of sufficient importance to recommend him to membership in the Institute, then a record of his work should be a valuable addition to the history of our industry.

Flue Gases for Extinguishing Fire in Coal.

At a recent meeting of the Sydney Section of the Society of Chemical Industry, Dr. George Harker described an apparatus which is being successfully used for extinguishing fires in ship's holds by means of flue gases. The gases are drawn from the ship's funnels by means of a fan, passed through a special water cooler and cleaner, and delivered to the holds by pipes. By tests at a plant recently installed in London it had been conclusively proved that coal fires can be so extinguished. The result bears indirectly on the question of the spontaneous combustion of coal. When a confined volume of air is left in contact with coal dust, a large proportion of the oxygen will be removed from the air after several days' contact. In one experiment with bituminous coal, a flask was filled with the finely ground coal and left in a room at summer temperature for a fortnight, and the gas in the flask showed, on analysis, only 4.86% of oxygen and less than 1% of carbon dioxide. The conclusion has been drawn from experiments such as these, that in order to extinguish a mass of coal on fire the atmosphere surrounding the coal must be entirely devoid of oxygen. But the absorption of oxygen by the bituminous compounds of the coal is quite a distinct process from the combustion of the coal, accompanied by the rapid production of carbon dioxide and water. In the experiments in which a large mass of glowing coal was extinguished, the proportion of oxygen in the flue gas was about 9%. Coal when burned under specially suitable conditions can produce a flue gas containing as little as 4% of oxygen; but, as has been pointed out, the application of a gas containing 10% of carbon dioxide and 10% of oxygen, instead of air with 21% of oxygen, immediately slows down the combustion and produces a cooling effect.

Pilot Flame Ignition of Incandescent Gas Lamps.

Paper by C. W. JORDAN to the Illuminating Engineering Society.

The subject of pilot flame ignition of incandescent gas lamps may appear to many to be rather a minor or unimportant detail of the broad general subject of gas lighting, and yet on analysis it will be found to be vital for the successful operation of lamps in practice.

Convenience in gas lighting has become a necessity, and many devices have been perfected for securing automatic ignition, in some cases controlled from distant points. Despite the ingenuity shown in the design and mechanical construction of these devices, for one reason or another, they have not recommended themselves as competent to meet the practical requirements of service. Those that are apparently satisfactory, automatically actuate a mechanism turning on the main gas supply, which in turn is ignited by a pilot flame. Therefore the convenience of such mechanical devices is dependent not only upon their own merits, but also upon that of the pilot.

Other devices, which do not use pilots, while ingenious, well constructed and positive in action, owing to their high initial cost do not find wide application. Pyrophoric igniters, self-lighting mantles, etc., are not extensively used because of the ease with which the mechanical parts get out of order, or on account of the short life of the active material.

The simple pilot by-pass and gas cock actuated by pulling a chain, meet the demand for convenience, economy and service in the most satisfactory manner. This paper, therefore, will be devoted to telling the history of the use and improvement of this simple means of ignition, which depends upon the same energy or fuel that supplies the lamp itself, and which is operated by the same mechanical movement that controls the lamp. Every consideration points to this as the ideal, as well as common-sense method of ignition, if it can be perfected.

Pilot By-Passes.—A pilot by-pass may be defined as a device by means of which a supply of gas is regulated and led from a point just ahead of the gas cock of a lamp to a pilot tip or point of discharge conveniently placed near the mantle. The gas cock and pilot take-off are in some cases of separate constructiou from the lamp, and easily detachable; while in others they constitute a true part of the lamp construction.

The length of the pilot flame is regulated by turning a small screw which moves in or out of a construction in the passageway leading to the pilot tip. In some instances lamps are equipped with so-called "flash pilots," one in which the pilot momentarily elongates during ignition and shoots across the top of, or into, one or more mantles of the lamp. The means for successfully accomplishing this are several. In one lamp a secondary cock is connected to the primary gas cock, so that, upon pulling the chain to light the lamp, it is turned 180° and the gas passes through to the pilot tip at unrestricted pressure, by-passing the ordinary regulating screw. Another device consists of an additional passageway drilled in the gas cock, which, in being turned on, supplies gas at unrestricted pressure through a small tube by-passing the regulating screw. When the cock is turned on full, the passageway in the gas cock is no longer opposite the passageway leading around the regular screw, and the gas to the pilot is supplied only through the usual regulating screw. Flash pilots are effective, especially in arc lamps, in that they secure more positive and softer ignition of all the mantles.

Pilot Tips.—Little trouble has been experienced in constructing efficient means for regulating and conveying the pilot gas supply to the point of discharge, but the construction of a satisfactory pilot tip, especially for inverted lamps, has been very difficult,

The main troubles encountered are, (1) carbon formation, (2) clogging of the tip, due to disintegration of the gas, etc., and (3) the ease of extinguishing the flame by draughts.

With upright lamps a plain metal tube of small diameter, placed properly in a vertical position, burns satisfactorily, but the flame is easily extinguished if the lamp is subjected to excessive draughts. A center pilot was then designed, which consists in placing the pilot flame directly above and in the center of the burner cap gauze, thus utilizing the mantle as a means of protecting the flame from draughts. The construction of a center pilot by-pass is shown in Fig. 1.

With inverted lamps it was necessary to use pilot tips made of lava or other refractory material, in order to overcome the common troubles before mentioned. Lava pilot tips have undergone decided changes, both in the principle upon which they operate, and in design. The first type consisted of a simple passage drilled through the tube, and having a side outlet for discharging a luminous flame horrizontally. A tip was then developed that gives a blue Bunsen flame, the gas discharging horizontally through a small orifice into a mixing tube provided with two air inlets. When operating at normal consumptions, between 0.1 and 0.15 cubic foot per hour, a perfect Bunsen flame is obtained, which is extinguished by draught with far greater difficulty than the luminous flame pilot, and has the additional advantage of eliminating troublesome carbon formation or smoky flame. Changing the position of the primary air inlets from a vertical to a horizontal position was found to render the pilot appreciably more resistant to draughts. Six types of lava tips are shown in Fig. 2. In the early development of the Bunsen flame pilot, a series of unlooked for defects were found, a description of which may be of interest. In order to obtain a true Bunsen flame it is necessary to make the orifice of very small diameter, 0.016 inch. After a few hundred hours burning of the lamp the orifices invariably become clogged. The tips were made of natural lava, baked, and on the interior a hard glossy coating of carbon, resembling flaked graphite, was found. This extended through the entire passageway to the orifice, which, on account of its small diameter, became stopped first. An investigation was made, and it was found that the decomposition of the hydrocarbons in the gas to carbon, was influenced not only by the high local temperature (620° C. at the orifice), but also by the physical properties of the substance used. By using a tip made of finely crushed natural lava, repressed and baked, the trouble was practically eliminated. A small amount of carbon formed in the passageways, which was grayish instead of black, and after the lamps were burned several thousand hours was found not to give trouble.

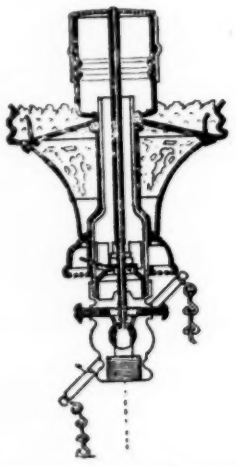

Fig. 1.—Center Pilot Burner.

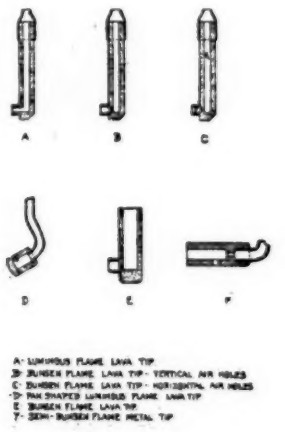

Fig. 2.

An interesting series of experiments was made to illustrate the influence of the physical and chemical properties of the pilot tip material upon the decomposition of the gas. Various substances were placed in a transparent quartz tube, through which illuminating gas was passed, and heated slowly and uniformly by means of an electric furnace. Certain substances, like metallic oxides (particularly mantle ash) became covered with carbon at a temperature as low as 260° C., while others, like glass, quartz, etc., only darkened at a temperature above 650° C.

A still more recent change has occurred, both in the design of pilot tips and in the position in which they burn. The pilot tip of the lamp shown in Fig. 3 is mounted vertically, and in this position the flame is very well protected from draughts, and at the same time is positive in its ignition of the mantle.

Service Troubles.—Pilot devices are subject to numerous troubles in service. In certain localities the methods of manufacturing and purifying gas are liable to change suddenly from normal, and often tar particles are carried in suspension by the gas for considerable distances from the works. In this event the tar rapidly accumulates on the pilot adjusting needles of the lamp, and completely closes the minute annular opening through which the gas discharges. In order to overcome this trouble a purifying device was designed, shown in Fig. 4. Essentially it consists of passing the gas through a small cylindrical brass tube, packed with asbestos wool, glass wool, mineral wool or other suitable material, by which the gas to the pilot flame is completely detarred.

When the filtering material becomes clogged or saturated, the brass tube is removed, cleaned and repacked. This simple device has proven very effective, and in a few instances absolutely essential for the proper working of pilots.

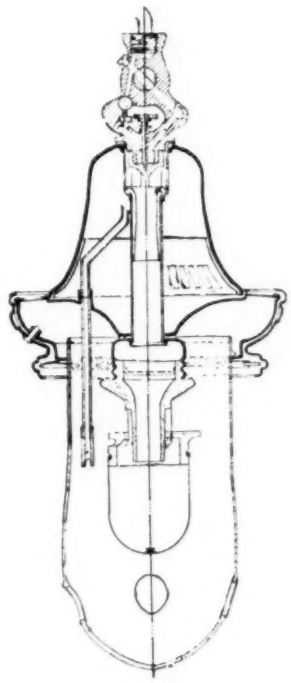

Fig. 3.

Pilot outage due to draughts is a condition which lamp manufacturers have been attempting to minimize and eliminate. The seriousness of this trouble is primarily dependent upon the conditions under which the lamp burns, and whether it is an indoor or outdoor lamp. The luminous flame pilot is far from desirable in this respect, unless it is properly surrounded by a protecting casing, in which case it is very liable to carbonize. With upright lamps the pilots can be readily enclosed by the mantle (see Fig.1), and are thus very efficiently protected.

With inverted lamps the problem was more difficult. Investigation led to the adoption of the Bunsen flame pilot tip, and in a later modification to a type that is very difficult to extinguish (see Fig. 3.) With outdoor lamps the use of semi-Bunsen pilots, surrounded by a protecting casing (see Fig. 5), has proven very satisfactory. Radical changes in the construction of pilot tips, being experimented with at present, give promise of producing a practically inextinguishable pilot.

Pilot Consumption.—A consideration of the consumption of gas by pilots is of importance, in that consumers are often misinformed or entirely ignorant of its magnitude. The consumption is not only influenced by the length of flame, judged adequate by the adjuster, but also upon the practical type of pilot by-pass used. The so-called "sub-flame" pilot by-pass is in reality a simple device for turning low a gas lamp. As the flame must burn over the entire surface of the burner gauze without danger of flash-back, the consumption is naturally greater than that of an ordinary pilot. The use of the "sub-flame" pilot by-pass is rather limited, and its consumption should not be taken as representative of the more efficient types.

The following table shows the normal consumption of various types of indoor and outdoor lamps, and the ratio of the total gas consumption to the pilot consumption. These calculations are made on the assumption that the lamps operate on mixed gas at 2.5 inch pressure. Total heat value 650 B.T.U.; specific gravity 0.660.

Lamp.	Normal Pilot Cons. per h ur (Cu. ft.)	Approx. Length of flame (Inches.)	Normal Lamp Cons. per hour (Cu ft.)	Lamp Cons per Year 4 h s. daily (Cu. ft)	Pilot Cons. per cent. of total Cons.
1 burner inverted indoor, Bunsen pilot.....	0.120	¼	3.50	5,110	17.1
1 burner upright indoor, luminous pilot.....	0.095	½	4.65	6,789	10.9
3 burner inverted indoor arc, semi-Bunsen pilot..	0.147	⅜	10.00	14,600	8.1
5 burner inverted outdoor arc, semi-Bunsen pilot..	0.213	½	17.50	25,550	6.8
1 burner inverted indoor, luminous pilot.....	0.152	⅜	3.45	5,037	20.9

Novel Use of Blue Flame Pilots.—As mentioned before, the essential reasons for changing from the luminous flame to the non-luminous Bunsen flame pilot, were because of the greater difficulty of extinguishing the flame of the latter by draughts, and the elimination of troublesome carbon formation or smoky flames. In addition to these features, the non-luminous flame lends itself to a novel and efficient use. It has long been contended that the luminous flame pilot, instead of being considered a necessary expensive accessory of a gas lamp, in reality is an efficient adjunct, in that it serves the purpose of guidance to the consumer desiring to turn on a lamp in a dark room. By placing the Bunsen flame pilot so as to impinge upon the mantle, an increase of 500% in the intensity of light is obtained over that of the luminous flame pilot.

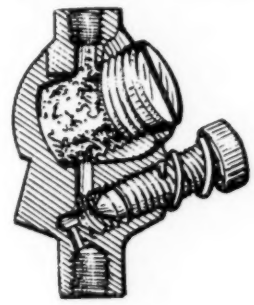

Fig. 4.—Tar Scrubber.

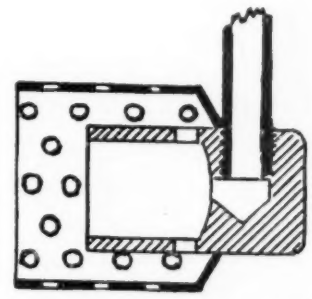

Fig. 5.—Semi-Bunsen Protected Pilot.

The following table shows the maximum horizontal candle-power obtained from the two types of pilot flames:

Type Flame.	Max. horizontal Candle-power.	Corr. Cons. cu. ft. hour.	Hor. Candle-power per cu. ft.
Bunsen flame.....	0.1612	0.126	1.28
Luminous flame.....	0.0319	0.130	8.245

Open flame candle-power of gas burned in 8-inch tip, 22.0

The increase in intensity not only serves as better guidance in turning on the lamps at night, but to the dark adapted eyes it affords sufficient illumination to comfortably distinguish many objects in an ordinary room. This is obtained at a cost no greater than that of maintaining the luminous pilot flame. In addition, it is more difficult to extinguish a pilot flame impinging on the mantle. In cases where pilot illumination is objectionable, it is merely necessary to turn the pilot flame away from the mantles and practically no light is obtained.

Oil in Russia.

According to the *Petroleum World*, the Russian Government is moving to a State control of the oil industry, not by direct nationalization, but by conferring upon Ministers the power to requisition stocks of fuel oil or other products. A decree has been issued giving the Minister of Ways and Communications additional powers for supervising and controlling the supply of fuel to the army and navy, the Ministry of Ways and Communications, and the private undertakings engaged in work required by the interests of the defence of State. The decree authorizes the Minister:

1. To demand information from all State or privetely owned undertakings concerning the quantities of fuel stored, expected for delivery, and actually required; also all contracts relating to future deliveries.
2. To inspect all the storages and stocks of fuel in the Empire.
3. To distribute at his discretion the fuel provided for the State requirements, among various State departments or private undertakings as may be deemed necessary.

Prince Shahovskoy, the new Minister of Trade and Commerce, recently presided at a conference between the Government and representatives of the oil industry at which the commandering of oil supplies was discussed. The Chairman of the oil representatives, Mr. Gukassov, said that the production in Russia in 1915 would be 1,600,000 to 2,000,000 tons over 1914. This would be sufficient to satisfy all the regular consumers of oil and to leave a margin for those who desired to convert their coal burning furnaces to oil burners.

The transport facilities, however, would be equal to only 1,000,000 or 1,100,000 tons.

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CHARLES H. WADELTON, Secretary and Manager.

SANFORD K. CAMPBELL, Editor.

NEW YORK, MONDAY, OCTOBER 4, 1915.

Fearful of Commission Regulation.

If National regulation of public utilities, as distinguished from present time State regulation, ever comes, it will be but the beginning of regulation for other branches of industry. That some interested parties see a step toward this in recent action of the Federal Trade Commission, is endorsed by these comments of a coal trade paper:

"The Federal Trade Commission is planning to introduce cost accounting as a means of relieving the difficulties of business. It is going to lend the services of public accountants to those who want to install a proper bookkeping system and who want to learn how to use information contained in books.

"The coal trade is in such straits and is so in need of help that a danger presents itself. Coal men are likely to accept public cost accounting without figuring what the consequences are sure to be if the system is carried to its logical conclusion. It is well, therefore, to let the imagination play upon the possibilities before plunging.

"If Government experts supervise coal cost accounting, they will know what the cost is. Then, if the Trade Commission, which puts out cost accountants, supervise the selling arrangements, the commission will know what the profits are. That is, knowing the cost and knowing the selling price, it is easy to figure the profit.

"Another point: It depends entirely upon who is on the Trades Commission at that time as to whether its rulings will be fair or unfair to business. For example, there are several theories as to what is a proper profit. One theory is that *the money invested* should have a certain return; we will say 10%. Another theory is that there should be a percentage of profit on *each trade*.

More particularly, would the Trade Commission make the same ruling on a mine as on a retail yard? Would it hold a retail yard to the same percentage of profit that it gave the operator? If it would, the retailer is out of business before the ruling is even put into effect. If the retailer had to make as little per ton, as the operator does, to retail coal would be out of the question.

"Also, how is the Trade Commission going to look at a proposition of this sort: The steel business to-day is, because of its tariff protection, making a profit of 50%. The coal business is making about 1% to 1½%, or none at all. Will the Trade Commission try to level up the coal profits to the steel profits, or will it try to level the steel profits down to the coal profits? Will it try by cost accountants on one side and public regulators on the other to level one up and the other down?

"Will this apply to little business and to big business alike? Will it give the small coal retailer 10% on $5,000 worth of business, and then give the big department store in Chicago 10% of $50,000,000 of business?

"Under the circumstances, what would be the natural result to business? Will not the little fellow cease to exist and the big fellow hog it all because he has greater funds upon which to grow?

"We could go on with suggestions of the possibilities of public cost accounting to almost an unlimited extent. The point is that the Government is trying something new. It will be well not to plunge before we know what the consequences are going to be."

(Special Editorial Correspondence, by Telegraph, from Dr. A. H. Elliott.)

International Gas Congress.

San Francisco, Cal., Sept. 28, 1915.

About 400 of the gas engineers of many lands have gathered in sunny California to take part in the International Gas Congress, together with many ladies, as the guests of the Pacific Coast Gas Association, as fine a set of hosts as could be found. The generous provision of comforts to assist the officers of the congress are in true California spirit. The handsome rooms and "Hall of the Native Sons" are a surprise to every member as he arrives and registers.

On Tuesday the first business meeting of the congress convened, and Mr. E. C. Jones, on behalf of the Pacific Coast Gas Association, presented Dr. Humphreys with a silver mounted gavel of California redwood. The president then gave his address, welcoming the delegates, touching upon the influence of the war and the good attendance in spite of it. He also touched upon the Public Service Commissioners and the improvement in the relationship growing between them and corporations. He advocated the dissemination of the truth in the affairs of public service corporations, and the assurance that our business is carried on with due regard to the rights of all interested. The papers have been interesting, and most of them well discussed by many members.

Twenty-third Annual Meeting, Pacific Coast Gas Association.

The Pacific Coast Gas Association had a short meeting on Monday, when they elected officers for the ensuing year. The only other business was the retiring president's address, and a report of the course in gas engineering which is supported by the Pacific Coast Gas Association at the University of California. The retiring president, Mr. E. C. Jones, gave a glowing account of oil gas manufacture in California, every foot of which was made from petroleum. Mr. John A. Britton spoke on the gas engineering course at the university in glowing terms. The new officers of the Pacific Coast Gas Association are Frank A. Cressey, Jr., of Modesto, president; C. B. Babcock, of San Francisco, vice-president; and Henry Bostwick, San Francisco, secretary-treasurer. The evening was devoted to a reception to Dr. Alex. C. Humphreys, and a ball in which 500 people participated with evident great pleasure. About 120 members of the congress came from New York, Boston and Chicago, accompanied by about 40 ladies.

Tenth Annual Meeting, American Gas Institute.

Tuesday afternoon the American Gas Institute met and elected the following officers:

President, William E. McKay, Boston, Mass.

Vice-Presidents, Manufacturing Section, Herman Russell, Rochester, N. Y.; Distributing Section, Jacob D. Von Maur, St. Louis, Mo.; Chemical Section, Arthur H. Elliott, Flushing, N. Y.; Illuminating Section, Charles O. Bond, Philadelphia, Pa.; Accounting Section, John P. Crowley, St. Paul, Minn.

Secretary and Treasurer, George G. Ramsdell, New York, N. Y.

Directors (for full term), Dana B. Barnum, Worcester, Mass.; R. B. Brown, Milwaukee, Wis.; Charles M. Cohn, Baltimore, Md.; George B. Cortelyou, New York, N. Y.; Robert B. Harper,

Chicago, Ills. For unexpired term, Robert W. Bush, Brooklyn, N. Y.

Then followed the reports of the various committees.

The Committee on Beal Medal reported in favor of Mr. F. W. Steere, for his paper on the "Electric Process of Detarring Gas."

Letters were received, with invitations, from Baltimore, Cincinnati, Boston and Chicago, to come for the next meeting of the Institute, and the matter was left to the incoming officers to decide.

The address of Mr. E. C. Jones, the retiring President, considered the large attendance at the Gas Congress and the great pleasure San Francisco felt to the delegates who had come so far. He also touched upon the "Collective Gas Exhibit," which received a grand prize, the highest award at the Panama Pacific Exhibition, also a silver loving cup as a prize for the most attractive and best decorated exhibit. He also spoke of the Public Relations Committee of the Institute and the importance of its work, and commended the work to all members in the Institute.

Some unfinished work will be deferred until Friday, and the intervening time of the members of the Institute will be devoted to the proceedings of the Gas Congress.

[Special Telegraphic Report.]

TWENTY-FOURTH ANNUAL MEETING OF THE MICHIGAN GAS ASSOCIATION.

Closing Day—Detroit, Mich., Sept. 24, 1915.

The session opened this morning with a good attendance, and the following papers were proceeded with:

"Recent Developments in the Doherty Washer-Cooler and Condenser Systems," by R. B. Rowley of the Semet-Solvay Company.

"House Maintenance of Gas Lighting," by Wm. O. Weekes.

"A Talk on Accident Prevention," by Chas. B. Scott.

All of which were satisfactorily discussed.

The report of the committee of nominations presented the following for standard bearers for the coming year:

President—B. R. Laraway of Jackson.

Vice-president—Glenn R. Chamberlain of Grand Rapids.

Secretary and Treasurer—Clark R. Graves of Lansing.

Then followed a contribution from Professor Alfred H. White and his assistants of the University of Michigan, who are in charge of the experimental and research work carried on by the Michigan Gas Association through its Fellowships, which is always of value and interest to everybody in the gas business.

The program completed, brought to a close one of the most interesting and instructive conventions of the Michigan Gas Association.

[Advance Notice.]

ELEVENTH ANNUAL CONVENTION AND GAS APPLIANCE EXHIBIT, NATIONAL COMMERCIAL GAS ASSOCIATION.

WASHINGTON, D. C., November 29th to December 4th, 1915.

Members of the National Commercial Gas Association are invited and urged to attend the forthcoming Eleventh Annual Convention and Exhibition of Gas Appliances, at the New Willard Hotel, Washington, D. C., November 29th to December 4th. The meeting will be a fitting end to one of the most successful years in the Association's history. A large attendance is assured, and the meeting and exhibit should be helpful to every member. All of the sessions will be held in the New Willard Hotel, in a large hall immediately adjoining the ball room, in which latter will be the appliance exhibits.

The opening session of the convention will be Tuesday morning, November 30, at 10 o'clock.

In order to allow the delegates full opportunity for study and comparison of the various appliances on display, as well as to give the manufacturers' representatives opportunity of attending the sessions, there will be no morning sessions, except the opening session, on Tuesday morning, and a special session on Thursday morning for the Industrial Fuel and the Differential Rates Committee. Members who are interested in these topics are invited to attend these committee sessions.

The Registration Bureau will be located in the hall immediately adjoining the Convention and Exhibition Halls, and will be open Saturday morning, November 27th, and every day during the convention. All members, whether registered in advance or not, are requested to register immediately upon arrival, and those who expect to attend are requested to notify the Association, at its offices in New York city, as promptly as possible. This will greatly facilitate the work of the Registration Bureau.

Members desiring advance copies of papers can secure same by applying to the New York Headquarters of the Association, 61 Broadway.

Entertainment Features. The Entertainment Committee is preparing a program that will not interfere with the business of the Convention. There will be many interesting and entertaining functions during Convention Week, but the Association is on record as discouraging any tendency to consider its annual gatherings as as anything but business meetings, with, of course, the proper relaxation and diversion in the right place.

[OFFICIAL NOTICE.]

Eleventh Annual Convention, Empire State Gas and Electric Association.

UNITED ENGINEERING SOCIETIES BUILDING,
29 West 39th Street, New York City,
October 7th and 8th, 1915.

Thursday, October 7th—Morning Session.

Meeting called to order promptly at 10:30 A.M.

Roll call.
Minutes of previous meeting.
President's address.
Report of Treasurer.
Report of Secretary.
Report of Accounting Committee.
Report of Electric Meter Committee.
Other reports.
Unfinished business.

Recess for luncheon at 12:45 P.M. Buffet luncheon served in building.

Afternoon Session—2.30 P.M.

"Co-operation between State and National Associations."
E. W. Lloyd, President National Electric Light Association.
W. E. McKay, " American Gas Institute.
H. B. McLean, " National Commercial Gas Association.
Discussion.

Friday, October 8th—Morning Session.

Meeting called to order promptly at 10:30 A.M.

"Method of Analyzing Cost of Service—Gas and Electric," paper by C. A. Graves.

Discussion.

Recess for luncheon at 12:30 P.M. Luncheon at Engineers' Club at 1 P.M.

Afternoon Session—2:30 P.M.

"Insurance Under the New York Workmen's Compensation Law," paper by J. T. Hutchings.

Discussion.
New business.
Report of Nominating Committee.
Election of officers.
Adjournment.

How Can Gas and Electric Companies Under One Management Render the Best Light Service?

[From a paper by A. B. SPAULDING and N. H. POTTER, Convention Illuminating Engineering Society.]

One of the most important subjects to-day among gas and electric companies is "How can the best service be given?" The engineering phases of this question have received marked attention, and the improvement in design and operation of gas and electric plants has increased the confidence of the public in the efficiency of these plants.

This paper deals with the rendering of service after the product is delivered, or beyond the meter. There are differences of opinion as to how this can best be done.

Among the trio of products of gas and electric companies—light, heat and power—light has always received the first place. Upon the selling of this product depended the initial success of all gas and electric companies; and the early history of both industries is bound up inseparately with the development of their lighting business.

There has been a radical change in the methods and personnel of the selling force. Heretofore gas and electric energy were the points of discussion with the consumer; but now illumination is the topic. Instead of so many cubic feet of gas or watts of energy, illumination is being sold.

On account of this advancement, the illuminating engineer has developed, and the Illuminating Engineering Society is an outcome of the desire of gas and electric companies and manufacturers to render the public a service by united effort toward improved illumination.

The present estimate of the work of any man must be, "How much does he produce?" and if any representative, no matter what his printed title may be, does not produce, he is not efficient.

Selling and service should be synonymous, and service has various phases. In order to render it intelligently it is essential, first, that the representative be capable of laying out and supervising a lighting installation; second, that the consumer be educated to appreciate the difference between proper and improper lighting, in so far as the value of proper lighting to his business is concerned.

Service does not necessarily mean the reduction of bills; it may and often does result in an increase in the amount of business with customers. Proper illumination is desired and must be the primary factor in the discussion of cost, not only of electricity and gas supplied, but of fixtures and first installation. Service, therefore, means the providing of the illumination best suited to each customer at minimum cost.

Both the representative of lighting companies and the public must be educated to the value, use and maintenance of a lighting installation.

Gas and Electric Specialists on the Sale of Illumination.—The writers believe that with gas and electric companies under one management, specialists on gas illumination and specialists on electric illumination are productive of the best results, particularly as regards service to the customer. This method is in reality intensive selling, and each man becomes an expert in either gas or electric illumination. Both men are selling the same thing, viz., illumination; and unconsciously, perhaps, each man picks out the most likely prospects.

It would seem that there is no good reason for a gas or eleetric company, under one management, adopting a policy which encourages any one source of supply. The duty of such a company is not to pre-determine what service to sell, but to give the customer the benefit of the best advice and leave to him the decision.

That two sources are better than one is certain where gas and electric units are installed for general illumination. The units should, of course, harmonize with each other and with their surroundings. The only question, which might influence the installation of a single source, would be its adaptability.

The argument has been advanced that by having one man sell both gas and electric illumination, the selling force could be cut in half. This is not true if the business is to be taken care of properly.

It has been contended that the consumer is confused by having two men advising different sources of supply. This may be true where companies are under separate management if competition dictates a policy of "Get business anyway—but get it," rather than a policy of real service to the consumer. With a company under one management the consumer is not confused by having information on both gas and electric illumination from different men.

The customer should be credited with common sense and have the privilege of choice. By having both sides advanced to him by experts he is able to consider economy, convenience, safety, etc., and in the end be sure that he is getting that method of illumination best suited to his needs.

Summing up the case one finds that separate gas and electric lighting representatives are in the end no more expensive than combination representatives. There is absolutely no question that this separation does stimulate the trade in a healthy manner. Each salesman becomes more proficient in the art of gas or electric illumination as the case may be. He has co-operative competition and will necessarily have to watch his installations more closely. He is also forced to make the proper installations, to render proper service after the installation is made, and to keep in close touch with improvements in his particular line; otherwise he is likely to have "lost business" charged up against him.

A man selling both gas and electricity is too prone to follow the path of least resistance and to think, "If I don't sell gas I will sell electricity," with the result that a desire for better illumination is not created, and therefore the best service is not given.

Education of Salesmen.—Lighting representatives should have a good appearance, personality and selling ability, together with a knowledge of the principles of illumination. The salesman should make a general survey of his territory and become familiar with its conditions. He should make periodic tours after dark in the store section. He can then pick out the improperly lighted stores, and by one night's work of this sort obtain sufficient leads to keep him busy for several days. The writers know of several instances where salesmen living out of town had never seen their territory illuminated. After making night inspections and following up leads thus obtained, the volume of store business from their particular sections showed a marked increase, and improved installations also resulted.

The representative should visit other districts than his own and, where possible, other cities and towns, thus acquainting himself with conditions, perhaps different from those in his territory, which will enable him to handle more successfully new and similar problems as they arise.

The lighting representative should, if he expects to become more valuable to his company, do everything in his power to increase his knowledge of illumination and other branches of the business. This can be brought about by his becoming a member of the Illuminating Engineering Society, National Electric Light Association and National Commercial Gas Association, through which he obtains at first hand, knowledge of all advancements in the art of illumination as well as other subjects. Particularly so, if he takes advantage of the correspondence courses now offered by the last two societies. If he be fortunate enough to have a local section in his vicinity, he will derive great benefits by attending all its meetings and taking an active part in the discussions. In addition he becomes acquainted with other men in the same line, receives the benefit of their personal knowledge and experience, and is able to reciprocrate.

There are other means at hand of increasing one's knowledge and keeping abreast of the times, viz., reading periodicals dealing with all branches of illumination and advertising literature sent out by manufacturers, which contains an education in itself. This literature should be studied, not merely read: for here is a fruitful field of knowledge. Up-to-date data can be obtained by having one's name placed on the mailing lists of manufacturers.

The sales manager in charge of these men should hold regular meetings for the discussion of illuminating problems. Arrangements should be made for visits to places like the testing laboratories of various fixture and lamp works. When some particularly fine installation has been made in the vicinity, a party should be made up to inspect and discuss it when it is lighted.

The company itself has a duty to perform in the education of its representatives. It should encourage the men to study and show that their efforts are appreciated.

The Public Service Gas Company and the Public Service Electric Company of New Jersey have given courses to develop the desire for further knowledge on the part of the men.

The following course has been given by the Public Service Electric Company:

(1) "The Central Station Salesman; His Duties, Troubles and Needs."

(2) "Lamps; Their Manufacture and Characterists." (Lecture by representative of a lamp company, and visit to factory.)

(3) "Light: Its Production; Its Properties. Some Laws of Light."
(4) "Measurement of Light and Illumination." (Visit to testing laboratories.)
(5) "Reflectors, Shades and Diffusing Globes; Their Use and Abuse."
(6) "Direct and Semi-indirect Illumination."
(7) "Location of Units; General Consideration."
(8) "Residence Lighting."
(9) "Store Lighting."
(10) "Industrial Lighting."
(11) "Electrical Advertising."
(12) "Kw-h. Sales and New Business."
(13) "Wiring." (By a contractor.)
(14) "Review."

Education of the Customer.—The main object of a storekeeper is to sell merchandise; he has no desire to become an illuminating engineer; but he is desirous of having his store and windows properly illuminated, provided, of course, he is an up-to-date merchant. In the event of his being behind the times—and there are many of that kind—in fact, they are the ones who make up the best list of prospects—he should be taught that a properly lighted store and window is absolutely necessary for success in selling merchandise.

The desire to have a properly lighted window, store, factory or home lies dormant in every man, and under stimulus he will unconsciously start a course of self-education by asking questions and observing other installations, and perhaps reading.

The company should send advertising literature acquainting him with the proper methods of using lighting units. For obvious reasons this literature should be absolutely non-technical. It should be snappy in appearance, and so written that it will hold the attention from cover to cover.

The manufacturer's representative should present the subject of illumination first, and, secondly, the wares he is selling. The architect builder, electrician and gas fitter should be educated by both the company and the manufacturer, in order that they may in turn do their part toward the education of the prospective customer.

With these three different sources of information for the customer properly co-ordinated there would be little or no reason for the absence of good lighting installations.

Relation of Representative and Customer.—As has been stated, the first consideration in this relation is impressing upon the consumer the value of proper illumination. Poor installations have been made in every town, and one of the present difficulties is to have the customer realize the importance of a good installation.

If the manufacturer of lamps and accessories were to deal entirely through the gas and electric company, whose sole idea is proper illumination, or at least submit for the approval of these companies the unit or accessory which is to be installed for a customer, relations with the consumer would be much improved.

Cheap and inefficient gas and electric units have caused the gas and electric companies much trouble. Such units are often sold with an argument to the effect that the gas or electric company is robbing the consumer and will not sell such units because they reduce the company's revenue. On account of such conflicting suggestions to the customer, it has been found advisable to demonstrate the correctness of recommendations made. The Public Service Electric Company has been using for some time very successfully window demonstration sets. These are made up in portable form and consist of 4-foot (1.23 m) sections of pipe, with 5 outlets. Twenty-five 40 or 60-watt lamps, with proper reflectors, may be connected, and in the case of large windows, several sets may be hung in line. The sets are hung by the representative in a few minutes by the use of a few screw eyes and picture wire, and connections made by lamp cord to any available lamp socket. As may be seen, the outfit is very flexible and may be made to fit almost any window condition. It may be advisable to change these outfits to accommodate the gas filled lamp, on account of its better color value and increased efficiency.

The demonstration not only shows the display to better advantage, but the merchant gives more attention to the dressing of his windows, which, combined with good lighting, results in increased sales of his merchandise, thereby bringing the company and customer closer together, the latter realizing that the company has rendered real service. By advising customers both as to lighting and dressing of their windows, it has been possible to have more light used, not only for illumination, but as part of merchandise displays. For instance, a customer who operates a piano store desired a special dressing for his window, and the display installed was a reproduction of a painting entitled, "Just a Song at Twilight." A reproduction of the original painting was placed in the window and properly lighted. In one corner of the window was a woman playing a baby grand piano, and on the other side a fireplace, in front of which the husband sat, holding a child in his arms. At one side of the room was a window through which was projected the proper effect. Alternately the lighting of the window itself was flashed on.

Since the installation of this window the Public Service Electric Company has been requested many times to dress other windows and in every case where this has been done, the number of observers of the window has been more than doubled, and in the case of the window mentioned, the observers were increased 1,200% between 5 and 11 o'clock at night.

These installations, which are allowed to remain about a week, usually convince customers of their value and lead to the installation of permanent outfits.

Factory lighting may be handled in the some way. Demonstrations of either gas or electric lighting has been in many cases the closing argument for the sale of better lighting.

After the installation is laid out, it is necessary that the representative should closely follow the development in the work to see that the suggestions of the electrician or plumber are not such as to spoil the desired results. It has often occurred that the customer accepting advice on changes in position of outlets and accessories secures an incorrect installation, and blames the representative for whatever unsatisfactory result may ensue.

The representative's responsibility does not end with the demonstration. It is his duty to lay out the proper units, supervising their installation and see that prompt service is rendered.

At this point the real service in lighting installations begins. Once connected to the company's supply, service to the customer never ends, and that all important questions of maintenance begins.

In the case of electric lighting, maintenance is more or less a matter of education. The customer should be taught first that electric lamps have a useful life and that after a certain period it is economy to throw away old and purchase new lamps. Secondly, reflectors decrease in efficiency with the accumulation of dust, and like the plate glass window in the store, must be cleaned periodically.

The customer usually promises to attend to these details, which is in reality a part of his regular house cleaning, but the drop in efficiency or the loss in illumination is by such small steps, that it is never noticeable from day to day, and the customer being intent on selling goods, gives little or no attention to the importance of maintenance.

The lighting salesman may continue rendering service by calling attention to any blackened lamps, dirty reflectors, etc. By stating to the customer that this is his (the salesman's) installation, that he is proud of it, but that it cannot come up to his guarantee unless properly cared for, the customer is usually awakened to his responsibility in the matter, and the habit of periodic inspection and cleaning is formed.

In the case of a gas installation, maintenance is also a very important matter. Thoughtlessness or carelessness is the reason for depreciation in lighting value. Again the daily change or drop in efficiency is so small as to be unnoticeable. Many customers, through not having time or appreciating this drop in efficiency, continue using old or broken mantles, with the result that very poor service is obtained from the unit.

Gas companies have been trying for years to educate customers to give proper attention to their lighting units, but in many cases it is almost a hopeless task, with the result that in many instances companies have launched maintenance departments to do for the customer what he does not seem to care to do for himself. Probably the day is not far off when all gas companies will have to maintain all customer's lighting installations in order to insure proper illumination.

It is the opinion of the writers that in order, that a gas and electric company under one management may give the best lighting service, separate representatives who are specialists in the application of each lighting source should be employed. These representatives should be encouraged to keep in touch with the science of illuminating engineering and the most advanced thought in modern salesmanship. The company should lead the customer to an intelligent appreciation of proper illumination and by the adoption of maintenance service should make him feel that the company is genuinely interested in his continued satisfaction.

What Policy is Being Adopted by Gas Companies to Meet Electric Stove Competition?

By V. S. McINTYRE, to the Canadian Gas Association,

This subject was handed in by me to our Secretary in the form of a question, and it was my intention to have it brought up at this convention as such, to obtain a general discussion by members especially those who represent combination companies.

Most of the members may think that bringing this subject up now is rather previous, as up to the present electric cooking competition has, in most cases, not been felt by the Gas companies. However it is a question that will have to be dealt with in the near future, and should be given careful consideration by us.

If you will pardon me for talking about electric ranges at a gas convention, I would like to give you a brief outline of facts which have come to my notice, particularly within the past 6 months.

About a year ago I was appointed on a committee of the Hydro Municipal Engineers' Association, to study the question of electric stoves, to test them and to bring in specifications for a suitable standard electric range that could be manufactured and sold for from $40 to $50. Our committee, after testing all electric stoves on the market at that time, submitted specifications for an electric range, and advertised for tenders for 1,000 of them. Twelve tenders were received, with prices ranging from $25 to $60, but owing to the financial stringency in Canada caused by the European war, our committee was unable to see our way clear to purchase in quantities as per tender received, and nothing further was done. However, through the efforts of the Hydro-Electric Power Commission, electric ranges are now being manufactured and sold at $45, and the publicity given to the electric stove proposition through this advertising, and the advertising by electric dealers in Hydro towns, has resulted in a demand for electric ranges.

In Berlin, where we operate both gas and electric light plants, and where we have a very large capital investment in our gas plant, we have found it rather difficult to decide upon a definite policy to pursue in supplying the electric stove demand. In some cities where combination companies operate, and where the rate for electric current is low enough to put electric ranges on a good competative basis with the gas range, the companies have adopted a policy of supplying and recommending electric ranges in preference to gas ranges in outlying districts where the gas department would have to extend their mains in order to reach these new consumers. This policy will in time, as these outlying districts become built up, result in there being no field for the sale of gas for cooking purposes, and the gas departments will only be able to increase the sale of gas on their present mains, which, in some cases, will be a very limited field.

About 8 months ago the estimated number of electric ranges in use in Western Ontario was approximately 400; the estimated number in use to-day is somewhat over 1,000. This at first glance appears to be a very small number, and not worth while considering, but when you go into this matter. you find that these 1,000 electric stoves are distributed in only about nine or ten towns and cities, which brings the number per community rather high; and with the increased efficiency in the construction of electric stoves that is continually being made, and the reductions in the price of electric current annually effected by the Hydro-Electric Power Commission, the demand for electric ranges, in my opinion, will greatly increase within the next few years.

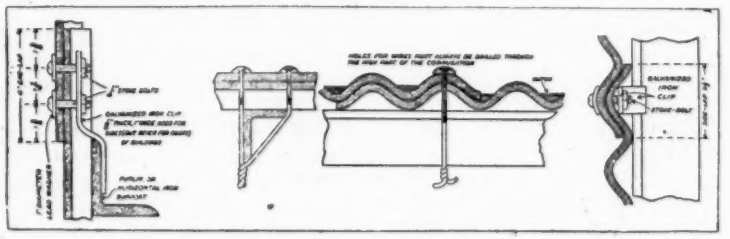
Taking the City of London, Ontario, as an example, I find that within the last 3 or 4 months they have installed 68 new electric ranges; and that the cost of operating the ranges per capita per month is 39.6c. This cost puts electric cooking competition on a very favorable basis with gas where gas is sold at 90c. per 1,000 cu. ft. and up. I have also obtained different costs per capita for operating ranges in other cities, and have come to the conclusion that electric cooking is becoming a competitor for gas, and should be given our careful consideration.

In conclusion, I would like to make a suggestion, that it might be advisable for the executive of this Association to take up with the manufacturers of gas ranges the question of increasing the efficiency of gas stoves, if possible, so that the consumption of gas in gas range ovens will be reduced, and the gas range put on a more favorable basis for competition with the electric range. I am not in a position to say whether this increased efficiency in gas ranges can be obtained, but am of the opinion that something could be done in the way of increasing the oven efficiency, probably in the way of adopting or working into the construction of the gas range, the principle adopted by the manufacturers of the new type of electric range.

Corrugated Asbestos Roofing and Siding.

After 10 or 12 years of experimenting, manufacturers have brought out a corrugated asbestos roofing and siding, which marks the final step in the process of development from flat sheets of asbestos building lumber bent while soft into corrugation, one at a time. This was afterward modified by placing iron wire screen between the layers of asbestos to give the material greater tensile strength. It was found, however, that where the material was exposed to corrosive fumes or to salt air that gases would enter through minute fissures in the convex side of the corrugations, ultimately causing the reinforcing material to disintegrate. The process of manufacture was then modified so that the material could be compressed while in the corrugated condition, a pressure of approximately 100 tons per square foot being employed. The resulting product, it is emphasized, is a dense and thoroughly compacted structure that will withstand rough treatment and not be affected by weather influences.

The process is the invention of Ludwig Hatschek, an Austrian. Hydraulic cement is first mixed with water and asbestos fiber in a beating engine similar to that employed in the manufacture of paper pulp. The prolonged mixing and agitation to which the material is subjected results in the formation of pulp having the properties of a colloidal solution, one of which is that small solid particles will remain in suspension indefinitely. The material then passes to the vat of a modified paper machine, where it is kept in a state of agitation until picked up in thin coatings by a fine wire screen on a revolving cylinder, from which it is passed by an endless felt belt to a second rotating cylinder, upon which it accumulates in layers until the desired thickness is secured. The material is then cut across and removed in the form of sheets, which are piled one upon another and placed between metallic plates. These are subjected to heavy pressure to compact the material, drive out excess water and eliminate voids and fissures. The numerous layers provide for the crossing of the asbestos fibers in all directions, which gives the finished material a texture of great homogeneity and toughness. The corrugated sheets are made with a uniform width of 27½ inches, or eleven complete corrugations, and in lengths from 4 to 10 feet. The corrugations are 2½ inches wide and 1 inch deep from top to bottom of the corrugation. The material varies in thickness from $\frac{3}{16}$ to $\frac{5}{16}$ inch and weighs about 3 pounds per square foot.



Drawings Showing the Method of Fastening the Corrugated Asbestos Roofing and Siding in Place, on Purlins.

The method of applying and supporting the material for roofing and siding purposes is shown in the cut. The roofing is lapped two corrugations sidewise and 6 inches at the ends, the inclined joints in succeeding courses being staggered from those of the preceding ones by the amount of the side lap. The supporting purlins are spaced so that the maximum distance between them is not more than 36 inches for roofing, and 40 inches for siding. The method recommended for attaching roofing sheets to steel and iron framework is with aluminum tie wires. Two holes are drilled through the asbestos, one just above and the other just below the purlin in the top of the corrugations and no larger than is necessary for the passage of the wire fasteners. The outer end of each tie wire has a head similar to a wire nail and holds a soft lead washer. The inner surface of the washer and the head of the wire are daubed with plastic asbestos cement before the wires are drawn up against the roofing, and the inner ends of the wires are twisted together around the purlin as shown. Iron wire nails with lead washers are used where the material is to be applied to wooden purlins. Where siding is used a galvanized iron clip bent so that the inner end rests over the purlin or other horizontal iron support is employed. The clip is fastened to the material by two ¼-inch stove bolts, the heads on the outside of the siding resting against soft lead washers. As with roofing, nails are used for fastening to wooden framework.

For protecting corners and ridges, rolls of the same material

are employed. The corner protective pieces are half cylinders, made in lengths of 16, 42 and 50 inches, applied so that the ends overlap. The ridge rolls have 6-inch wings that overlap the roofing. To enable the ridge roll to be applied to any peak or angle, it is made in two parts, the half cylinders turning one within the other to provide the desired angle for the wings.

Accidents that Could have been Prevented.

[From reports of MR. J. B. DOUGLAS.]

A rigger's helper sat on winch-head of a compressed air hoisting engine during the lunch hour. The engineer warned him that he was about to start the engine, but failed to see that the warning had been heeded. When the engine was started, the rigger was caught between the front and rear spools and badly injured. In the first place the injured man should not have chosen such a place to sit; and the engineer should have made sure that his warning was understood and obeyed.

Engineer attempted to tighten gland on feed pump while the pump was in operation, under 160 pounds pressure. The nut broke and hot water blew out and scalded a helper. The pump should have been shut down while adjustment was being made. Even though no accident had occurred, the engineer's example was bad.

While riding on a freight elevator a fitter's toes was caught and crushed between the elevator platform and a steel beam. Had there been a toe-guard on the under side of the beam, this accident would not have happened.

A maintenance man found lamp shade defective, but left it in position, intending to replace it on another call. In the meantime the shade fell and injured consumer. An illustration of the old adage, "A stitch in time saves nine."

Book Reviews.

The Rare Earths, their Occurrence, Chemistry and Technology: S. I. Levy.—350 pages, illustrated. Longmans. Green & Co., 1915. For sale by AMERICAN GAS LIGHT JOURNAL. Price $3.

During the 30 years which had elapsed since Dr. Auer's application of the rare earths to the production of artificial light, the incandescent mantle industry has developed to an extent that gives it a prominent place among those chemical industries which may be considered essential to modern civilization. In the foregoing prefacing remarks, Prof. Levy could also have stated that although a number of books and pamphlets have appeared in his country (Great Britain), few have reached America. The introduction by Sir William Crookes further emphasizes the importance of the Rare Earths for their commercial value, and as a basis for chemical research which promises to readjust our conception of the elements. The volume is divided about equally into three divisions. The occurrence of the Rare Earths, the Chemistry and the Technology.

Of especial interest to the gas fraternity are chapters on Monazite, Cerium, Thorium, Incandescent Mantle Industry, Chemical treatment of Monazite, Manufacture of Mantles of Cotton, Ramie and Artificial Silk. The deposits of monazite sands are given, and methods of separation described, and the numerous rare earths are characterized, classified and grouped so that the student may study and analyze upon a fairly broad basis. The chapters on the mantle industry could be used for employees' meetings in lieu of "papers," as the author's style is not only clear but it has a swing and interest, with a wealth of historical references which carry the reader rapidly and enjoyably to the conclusions. This method of treatment greatly increases its field of usefulness while not detracting from its merit as a successful contribution to applied chemistry.—T.

Welsbach Lighting Ad.

Lighting Week Attracts America's Attention to Welsbach Company's New Wonder Lights of Kinetic Principle

WELSBACH KINETIC GAS BURNER
WELSBACH KINETIC GAS BURNER
A CORNER OF THE GIRLS' CLUB HOUSE
EMPLOYEES LEAVING THROUGH THE MAIN GATE OF THE WELSBACH PLANT

WELSBACH CO. LEADS, SAYS P. P. I. E. JUDGES

Products Famous Throughout World Awarded Grand Prize at Panama-Pacific International Exposition.

INVENT "C. E-Z." LIGHT

Greatest Gas Lamp and Mantle Company Develops Kinetic Principle That Is Revolutionizing Lighting.

Startling Figures of Welsbach Company

"C. E-Z." LIGHT WITH SHADE "C. E-Z." LIGHT WITHOUT SHADE

The Philadelphia "Press" of Sunday, Sept. 26, contained a full page article on the Welsbach Company—part of which is reproduced herewith.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

THE Aurora, Ills., "Beacon-News" says: "The Western United Gas and Electric Company has declined an offer of a war order that would net the company approximately $300,000. A man, believed to be an agent for an eastern powder company, proposed to erect a $175,000 plant near the gas ovens at Joliet, to extract the substances wanted from the newly made gas. He agreed to pay the cost of erecting the new structure and to pay the gas company a stated amount per gallon for the substances obtained. At the end of 18 months the entire new plant would be turned over to the gas company, and the powder company would continue to buy the products at the market price. 'Our company is primarily in the gas business and intends to remain in the gas business,' stated I. C. Copley, president of the gas company, in refusing the proposition. 'Our patrons in this district represent practically all the waring nations of Europe. It is our intention to maintain strict neutrality. We will not accept the proposition.'"

THE inability of Tacoma's (Wash.) municipally owned hydro-electric plant to take care of its load at certain times of the year, has led to arrangements for the installation of a steam-driven reserve plant. The latter will be installed, except the electrical machinery, by the Tacoma Central Heating Company, to which a franchise has been granted, and whose principal business will be the vending of steam heating in the downtown district. The city agreed to cut electric lighting and power rates to the big downtown buildings to very low figures, in order to induce building owners to close down their own combination heating and electric plants, and buy steam from the new heating company and electric energy from the municipal plant. It has developed that despite the boast of the Tacoma plant of low rates, not less than 16 of the larger business blocks have their own isolated electric plants. The stationary engineers made a vigorous protest to the proposed arrangement without avail. The protests apparently, however, had the effect of causing a slight reduction in the residence electric lighting rate, although the superintendent says, "Thousands of consumers in the residence district do not pay the cost of service at the present rate." Both friends and critics of public ownership are wondering why Tacoma did not install its own auxiliary steam plant if the municipal electric plant has realy achieved the success claimed for it.

JOSEPH GOODBARN was an old and faithful employee of the Des Moines (Ia.) Gas Company. Here is what the President of the company says of him: "After a continuous service of almost 40 years, during which time he had scarcely lost a day on account of illness, the valued services of Joseph Goodbarn were ended by death on the 8th day of September, 1915. Mr. Goodbarn entered the service of the Des Moines Gas Company in June, 1876. He knew personally thousands of the company's consumers, coming in close contact with them in his work, and always with pleasure to them. He was honest, sober, competent and industrious. Mr. Goodbarn was a native of New Castle, England, in which country he learned the trade he worked at so long. His employers speak of him in the highest terms of praise."

REPORTS of the First District New York Commission show that on August 1 there were 875,168 gas meters in use in Manhattan and the Bronx. The commission had been requested by consumers to test for accuracy 34 meters. The result of the test showed that 23 of the meters measured correctly, seven were more than 2% slow, and four were found to be running more than 2% fast.

A CONFERENCE between the City Council of Seymour, Ind., and the Interstate Public Service Company has resulted in a reduction of the gas rate from $1.25 to $1. The city asked for 90-cent gas.

BRAINERD, Minn., will have a gas plant in operation by May 1, 1916. The Light and Power Company, which was granted a franchise, has engineers locating the mains, and it is planned to lay two or three miles of mains before frost sets in.

ACCORDING to the present speed at which gas mains are being laid in South River, N. J., the whole borough will be piped in a very short time. The Public Service Corporation has an agreement with the borough to finish the mains within five months after work was started, but from present indications the whole time limit will not be required.

THE chance for expert and long drawn out testimony is good in the suit of the Grays Harbor (Wash.) Gas Company against the Grays Harbor Railway and Light Company. The gas company is suing for $3,187.16 for the loss of 4,155,500 cubic feet of gas, and the destruction of gas pipes by electrolysis.

THE bottom of the new 1,000,000 foot holder for the New York and Queens Gas Company was lowered onto the foundation by 35 men with screw jacks in 45 minutes on September 18. Ground was broken for the holder on July 9, and it will be completed early in December. The Bartlett-Hayward Co. are building it.

THE office employees of the Cambridge (Mass.) Gas Light Company know that comfort is always a matter of concern to President Barnes and other officials of the company. During the recent hot spell the company arranged for serving ice cream and lemonade to the clerks at their work. This thoughtfulness of the company is but another link in the chain that strengthens the pleasant relations between employer and employee.

HERE is competition in maintenance of gas lights. The Somerville, Mass., "Enterprise" prints this notice: "Warning to Gas Consumers. Circulars are being distributed to houses in Somerville, purporting to be issued by the New England Gas Lamp Sales Company, Boston, Mass., and stating that a representative from their lighting department will call to inspect and adjust all gas lights free of charge. No such company is listed in the Boston City Directory or the Telephone Directory, and no street location is given on their circular. Gas consumers desiring any such service would more wisely apply to the office of the gas company."

THE Public Service Company of Northern Illinois has presented a petition to the village board of Wilmette asking that it be allowed to reduce the price of gas 10 cents per 1,000 cubic feet. This, according to the board, is the first time a public service company has asked permission to lower the price of service. At present, residents of Wilmette pay $1.10 per 1,000 cubic feet.

WORK has been started on the public utility galleries, which will be a part of the Union Station improvement in Chicago, the city and the Union Station Company sharing the cost. The galleries will be under Canal street, and will carry gas, electric light and power, water and other conduits. This will prevent the tearing up of the street for the laying of mains.

THE Ocala, Tex., "Banner" says: "The Ocala Gas Company succeeded the Citizens' Gas Company in 1912, and since that time the gas plant has been practically rebuilt, and new mains have been extended in every direction, and the use of gas has been increased more than five-fold. Over seven miles of mains have been placed in the streets. The price of gas for fuel purposes is $1.50 per 1,000 feet, with a minimum for consumption of 750 feet to obtain this rate, the franchise price being $2 per 1,000. The Ocala Gas Company has the distinction of selling more gas per meter than any other plant in the United States. This in itself speaks well for the character and quality of service furnished its consumers."

MR. ANDREW OUTZEN, formerly manager of the gas department of the Madison Gas and Electric Company, has been appointed Superintendent of Manufacture for the Binghamton Gas Works, Binghamton, N. Y. He assumes his duties October 1st.

THE Wisconsin Gas & Electric Company has purchased the Burlington Electric Light and Power Company. S. B. Way was president of the Burlington Company, and S. J. Boehm, secretary. The company was one of the few remaining independent light, heat and power companies in the State. The Wisconsin Gas & Electric Company has been negotiating for its purchase for a long time. The Wisconsin Gas & Electric Compuny is purchasing all of the independent concerns in the State as rapidly as possible.

THE Standard Gas Company is preparing to lay a gas main from its plant at Matawan to Freehold, N. J. Pipes have been distributed along the proposed line.

ANNOUNCEMENT is made by A. S. Scheer, Manager of the Carbondale (Pa.) Gas Company, that extensive improvements to the company's holdings in that city are being planned. The new improvements include the erection of a 2-story brick building on on Eighth avenue, a new holder and a new frame warehouse.

ALONZO P. EWING, assistant general manager of the Detroit (Mich,) City Gas Company, has tendered his resignation of the presidency of the Safety First Federation of America. The executive committee has not acted on it. Mr. Ewing was seriously ill a few weeks ago, and his physicians advised him to refrain from all work except his duties as manager of the gas company. It was because of this advice Mr. Ewing resigned. The annual meeting of the Federation will be held in Detroit this month, and a successor to Mr. Ewing will probably be chosen at that time.

THE Philadelphia Suburban Gas and Electric Company is making good progress on the construction of the gas plant addition, and it is expected that in about a months' time the plant will be in full operation. The new addition will result in about 140% increase in the output capacity.

A NEW gas plant is to be constructed in Middletown, Pa., to replace that now in use by the Orange County Lighting Company, as soon as action is taken by the public service commission upon the petition for the consolidation of the concern with others controlled by the new owners.

MR. C. W. HINMAN, formerly employed by the American Meter Company of New York City, and well known to the gas fraternity through his activities in the field of gas calorimetry, analysis, etc., has become associated with the DuPont interests of Wilmington, Del., where he holds the esteemed position of Research Chemist. Mr. Hinman has contributed much in the way of inventions, papers, etc., to the gas fraternity, and leaves behind a score of friends in the American Meter Company, as well as numerous others with whom he was associated.

AT the meeting of the Board of Directors of the Lancaster (Pa.) Gas Light and Fuel Company, the executive committee, of which George Bullock, President of the United Gas and Electric Corporation, is chairman, recommended a reduction in the price of gas in Lancaster to 90 cents, and the recommendation was unanimously adopted by the Board. The change will go into effect on December 1st, the delay being necessary to secure permission of the Public Service Commission, which will, of course, be granted. This makes the Lancaster rate for gas among the low ones of the United States. The new rate will be as follows: First 50,000 cubic feet per month, or less, $1 per 1,000,with a discount of 10%, or 90 cents per 1,000, net. In excess of 50,000 cubic feet per month, 80 cents per 1,000, with a discount of 10%, or 72 cents per 1,000, net. The rate heretofore prevailing has been 95 cents per 1,000, net, for consumptions of less than 50,000 feet per month, and from 90 cents down to 75 cents per 1,000 for very large consumers. To the small consumer the new rate is, therefore, a reduction of 5 cents per thousand feet.

LENOX, Mass., thinks well of the offer of the Pittsfield Coal Gas Company to extend its lines into the town of Lenox. The plan is to have 20 or more property owners sign a petition asking the gas company for its service. That done, the gas company will petition the legislature for the right to enter Lenox. This will be granted, for there is no other gas company within the town. It will require 4 miles of pipe to carry the main trunk from the country club of Pittsfield, where the pipe of the company ends. This pipe line, with the laterals required, will cost the gas company $40,000 or more.

THAT the Columbia Gas and Electric Company has completed plans of financing the extension of a pipe line from its West Virginia fields to Washington and Baltimore, is the declaration of Claude Meeker, local broker. Mr. Meeker was not able, however, to give an idea of the estimated cost of the project, but explained that it is a stupendous undertaking. Word from Baltimore is to the effect that the Consolidated Gas Company of that city is investigating the proposition. It is indicated that before the plan can be carried through in Baltimore arrangements must be made whereby the local company's mains can be utilized. A. B. Leach, president of the Columbia Company, has been in consultation with Baltimore officials regarding the proposal, it is said.

UTILITIES COMMISSION NEWS.

EARNINGS ADMITTED INADEQUATE.—The Massachasetts Public Service Commission has handed down a decision granting the Norfolk and Bristol Street Railway authority to increase its fares. The decision is the third of its kind within a year, the Middlesex and Boston Street Railway and the Blue Hills Street Railway having been granted fare increases, according to a well-defined policy of the commission, which recognizes the importance of additional revenue in cases where the petitioner demonstrates its necessity. The income of the Norfolk & Bristol Street Railway, from 1909 to 1915 inclusive, shows a net dividend income ranging from 0 to 6% on the stock, and averaging 3.27% over and above operating expenses and fixed charges. The commission states that "as they stand, these figures indicate an inadequate return on the stockholders' investment." The inspection department of the board estimates about $14.000 as the average expenditure, which should henceforth be made each year for several years to maintain tracks and overhead structures in a safe and proper condition, and about $11,000 for maintenance and depreciation of equipment. It appears that for the past two years if the company had expended $24,000 a year for maintenance and depreciation, it would have shown a deficit during the period. In order to make up this deficiency and permit of a 6% return to the stockholders, says the decision, the company must show an increase of more than $13,000 over its averaged net earnings for the past two years. With possible economies in operation, the company would appear on this basis to be entitled to an additional revenue of something more than $10,000 a year. The company, in its petition, states that an additional revenue of $10,000 a year could be raised by making the cash fare 6 cents within the limits of any fare zones and by the issuance of ticket books. The proposed new schedule has met the approval of the Public Service Commission in its essential features.

NEW YORK CURBS THE JITNEY.—With the filing in the Albany County Clerk's office of an order by Supreme Court Justice Hasbrouck the Public Service Commission finds the so-called "jitney bus" law sustained in all its principal phases. As the result of the decision the court holds that the following classes of vehicles must secure the consent of local authorities and come to the commission for a certificate of public convenience and necessity, namely:

(a) A bus line.
(b) A stage route.
(c) A motor vehicle line or route.
(d) A vehicle in connection with a bus line, a stage route, a motor vehicle line or route.
(e) A vehicle carrying passengers at a rate of fare of fifteen cents or less for each passenger within the limits of a city.
(f) A vehicle carrying passengers in competition with another common carrier which is required by law to obtain the consent of the local authorities of said city to operate over the streets thereof.

This classification was made by Supreme Court Justice Brown in a case in the Niagara County Supreme Court, wherein Burt G. Hultgam was restrained from operating a bus line from Lockport to Olcott Beach, though he charged a fare of fifty cents, and only part of his line was within the city of Lockport. The result of this decision is to make practically all operators of bus lines in the cities of the State liable to procedure under the penalty clause of the Public Service Commission Law, unless they secure the permission of the city authorities and the certificate of the Public Service Commission.

In Justice Hasbrouck's decision, he holds that in the case of Elmer G. Booth, of Rochester, the license of the city of Rochester, granted before this law took effect, does not relieve Booth from the necessity of getting the consent of the city authorities under the new law and of coming to the Public Service Commission.

"The license," says Justice Hasbrouck's opinion, "being the child of the statute, and not of the nature of a contract nor of a class known as vested rights, is susceptible of revocation or annulment at any time at the will of the creating power," (the legislature.)

CINCINNATI ELECTRICAL VALUATION.—Word has been received from Cincinnati, O., that the State Public Utilities Commission will come to that city next week for the purpose of hearing final arguments by the city on the physical valuation of the Union Gas & Electric Co 's electrical properties, and the public is invited to attend and participate in it. The ordinance fixing the electric rate at 8½ cents is being held up pending the decision of the State Utilities Commission and of the referendum.

Financial Notes.

THE Public Service Commission has approved issues of securities by the EMPIRE GAS AND ELECTRIC COMPANY, CENTRAL NEW YORK GAS AND ELECTRIC COMPANY and the EMPIRE COKE COMPANY, which will result in an expenditure of $161,200 for improvements to the gas and electric lighting systems in Auburn, Geneva, Waterloo, Seneca Falls, Phelps, Palmyra, Newark, Lyons and Clyde. In the gas department, the companies will spend $15,189 in Auburn; $13,772 in Geneva, $9,097 in Waterloo, $3,645 in Seneca Falls, $1,419 in Phelps, $2,018 in Palmyra, $9,508 in Newark and $3,519 in Lyons. The money will be secured by an issue of $72,000 of the 5% 30-year joint first and refunding bonds of the Empire Gas and Electric and the Empire Coke Company, to be sold at not less than 85, netting $61,200, and the issue of $100,000 capital stock of the Central New York Gas and Electric Company, which will be bought at par by the Empire Gas and Electric. The Empire Gas and Electric will in turn issue a like amount of its stock at par for the payment of the Central Hudson, and the Empire's issue will be bought at par by the Empire Coke Company.

THE GENERAL GAS AND ELECTRIC COMPANY, which was greatly enlarged by the acquisition of the Atlantic Gas and Electric properties, in April last, has sent to security holders a brief interim report. The following figures show the proportions of earnings from electric light and power, gas and railways for the old properties and the company as it is now constituted:

Calendar Year of 1914	General Gas as Operated Per Cent.	With Atlantic Properties Included Per Cent.
Operating revenues:		
Railway department	34.5	15.8
Light and power departments	36.0	63.0
Gas department	29.5	21.2

The proportion of earnings from gas and electric light and power properties, is increasing steadily. The stock is scattered broadly and is held mostly in small lots for investment. Decided progress has been made in reorganizing and improving the executive and operating forces of the newly acquired companies and in the good will of communities. Some misunderstandings with State commissions are being adjusted, and the companies will soon have the confidence of all the commissions with which they are in contact. The various properties serve prosperous communities in Pennsylvania, New York, New Jersey, Ohio and Vermont, in some of which there are particularly good opportunities for securing additional business. An increase in income has been produced, in spite of the extraordinary expenses necessarily attending a change of management, business conditions, and, during the last winter, exceptionally unsatisfactory conditions for water-power properties. The combined earnings of controlled companies for the 12 months ending May 31 were as follows:

	1915	1914
Operating revenues	$2,260,172	$2,132,422
Operating expenses and taxes	1,462,246	1,361,119
Operating income	$797,926	$771,303
Other income	18,337	16,977
Gross income	$816,263	$778,280

APPLICATION has been made by the OHIO CITIES GAS COMPANY to list its common and preferred stock on the Pittsburgh stock exchange.

AT a meeting of managers of the various properties operated by H. M. Byllesby & Co., J. J. O'Brien, vice-president and treasurer, stated that the success of the refinancing plan for Standard Gas and Electric Company for the sale of $3,750,000 6% 20-year debentures to stockholders of the company is already assured. In case the refinancing plan is successfully carried out cash dividends on the 8% preferred stock of Standard Gas and Electric will be resumed at the rate of 1% quarterly beginning with the new year.

THE HOUSTON (Tex.) GAS AND FUEL COMPANY has declared the regular quarterly 1¾% on preferred, payable October 1 to holders of record September 17.

CHALMERS OIL AND GAS COMPANY, regular quarterly, 2% on preferred, payable Oct. 1 to stock of record Sept. 24.

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